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Soil Conservation

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CONSERVATION ON PRIVATE RANGELAND: *SCS Range Surveys*—Page 147
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SOIL CONSERVATION SERVICE • U. S. DEPARTMENT OF AGRICULTURE

FEBRUARY 1965
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Soil Conservation

Realistic . . .

When SCS in the '40's moved away from livestock carrying-capacity estimates to a site and condition inventory as the basis for range planning, it gained increasing confidence of ranchers because experience proved the soundness of judgments based on realistic principles of ecology.

Our range technology takes an equally big step in the '60's in shifting from composition of "standing crop" of forage plants to weight of total annual yield of all plants as the basis for determining range condition.

SCS Range Boss Bill Allred worked with Writer Joe Larson and your editor to prepare an explanation (p. 147) of the new national method of range surveys.

New Aid: Soil conservation districts, as agencies of local government, are eligible to receive grants-in-aid from the new Land and Water Conservation Fund (p. 161) to help pay for *public* recreation developments.

District officials should not miss the opportunity to participate in State and local plans for outdoor recreation to be prepared under the direction of the Bureau of Outdoor Recreation.

Cover: The Roy Houck trail drive (p. 155) winds over the hills to winter range on his conservation ranch at Standing Butte, S. Dak.

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SCS Range Surveys

Weight of annual yield of all plants is new basis of judging condition

RANGE conservationists in the Soil Conservation Service are shifting to a uniform system of surveys that provides basic data for planning all possible uses of each range area — not just livestock grazing.

Two features of the new national system differ from procedures used in the past:

(1) It accounts for all parts—leaves, twigs, flowers, fruits—of all kinds of plants in the range cover, whether or not they are useful as livestock feed or are within reach of stock.

(2) Amounts of vegetation are measured or estimated as air-dry weight per acre of a year's growth — the annual production — exclusive only of enlargement of stems of trees and shrubs.

Standard Classification

For years SCS has used a standard method of classifying ranges by sites and conditions, described in the publication "Classifying Rangeland for Conservation Planning" (USDA Agr. Hbk. 235).

But range men in different parts of the country variously determined the composition of the vegetation—the necessary prerequisite to determining condition — on the basis of weight of forage per acre, or percentage of ground surface covered by the canopies of different species, or the basal areas of stems, or other theoretical measures.

Most, but not all, surveyors estimated the total quantity of vegetation on the land—the "standing crop"—as they visualized it at the end of the growing season. Some considered only that within reach of livestock, others considered the total cover.

The national system will continue to classify rangeland by the site and condition system that has proved itself in practice. But all descriptions and comparisons of vegetation will be in terms of *weight of annual yield of all parts of all plants.*

Toward Uniformity

The system not only will encourage uniformity between States and regions; it will provide information for judging suitability of each range site for other uses besides grazing — for wildlife, recreation, watershed protection, or any other in which the operator might be interested.

All the range States have now adopted the new method. All are either using it or making the transition to it. It is being introduced

to States that have given little attention to natural pastures in the past.

The system is the result of 30 years' experience in working out conservation plans with more than a half million ranch operators, combined with practical applications of exacting research techniques.

B. W. Allred, head range conservationist of SCS, says the new system produces a far more accurate and detailed analysis of range resources and conditions than previous ones.

For the district cooperator, it provides a broader base for choosing between alternative range uses and a more precise guide to the conservation needs of the land.

A Versatile Tool

For the range conservationist, it means a more versatile tool in range analysis, one that can be checked by mechanical means, and one that permits correlation of range descriptions across the State lines.

In making surveys under the new method, SCS has borrowed a technique from research scientists, who for years have measured yields by actually harvesting and weighing the herbage produced on test areas.

Use of this technique has to be learned through training and practice. But, once he learns it, the conservationist can survey range as rapidly as by previous methods. Moreover, he can check his judgment at any time by cutting and weighing samples of the vegetation within a measured area.

In the resulting weight estimates, the cooperator has an understandable measure of the productivity of his different range sites. And he has meaningful figures to compare his present yields with potentials, or with those of his neighbors.

The "weight of yield" survey tells the rancher how many pounds or tons of good livestock forage his range produces—in the same terms he is accustomed to using in thinking of the yield of hayfields or croplands.

The annual production of pricklypear cactus is mainly in the form of fleshy fruits. They are gathered and weighed to determine the plant yield of this species.

To check his estimates of weight of plant yield of woody species, the range conservationist selects a "weight-unit" of suitable size (indicated by the circle), strips off the current year's growth of leaves and twigs, dries them, and weighs them. While in the field, he determines the average number of equivalent weight-units per tree or shrub and counts the plants on a sample area (e. g., 100 feet square).

It also tells him, in the same terms, how much wildlife food is produced and how much total cover is available to protect the soil from erosion and conserve rainfall. He can compare the amount of the plant yield within reach of livestock and game and that out of reach. He has facts about plants important for recreation uses or other purposes.

When requested, the SCS conservationist helps a district cooperator evaluate his resources and make a complete conservation plan for his ranch. As they examine the conservation needs of the property together, they map out the range sites on an aerial photograph.

The range survey information enables the rancher and conservationist to classify the condition of

Example of Range Inventory

Plant species	*Maximum percentage in climax*	*Percent of present vegetation*	*Percentage used in determining range condition*
Decreasers:			
Sand bluestem		5	5
Sideoats grama	No limit	15	15
Little bluestem		10	10
Switchgrass		Trace	
Increasers:			
Blue and hairy grama	25	20	20
Sand dropseed	5	10	5
Perennial forbs	5	Trace	
Sand sagebrush	5	10	5
*Havard's oak	10	20	10
Invaders:			
Annuals		10	0
Cactus	None	Trace	
Total	100	100	70

Total plant yield: 4,000 pounds per acre

Condition class: Good

*One-tenth of oak is out of reach of cattle until acorns and leaves fall.

each range area on the basis of the percent of present vegetation that is "climax" for each site.

The different kinds of plants in the present cover are grouped according to their potential presence on the site and their response to grazing as: (1) *Decreasers,* species that are important in the climax cover and that decrease in relative abundance under heavy grazing; (2) *increasers,* species that are present, but of minor importance, in the climax cover and that increase in abundance as the decreasers decline; and (3) *invaders,* species that are not present in the climax but that come in and grow along with the increasers as the decreasers are reduced by grazing.

The four condition classes are recognized by the percentage of the present cover made by decreasers plus the small amounts of increasers considered normal in the climax or potential cover. The standards, which have been used by SCS for several years, are: Excellent, 75-100 percent climax; good, 50-75 percent; fair, 25-50 percent; and poor, less than 25 percent.

When completed, this map, in conjunction with the soil map, shows which land can best be used for range, tame pasture, cropland, meadow, woodland, wildlife,, recreation, or combinations of these.

Rancher Decides

The rancher then decides on changes to be made in the ranch enterprise and determines the feed crops needed for livestock and wildlife. He also decides which fields are to be used for crops and where tame pastures, meadows, windbreaks and holding lots are to be.

Contrary to a common belief, the range site and condition inventory is not made to determine grazing capacity of the range. Range condition, as used by the SCS, is the present state of the vegetation compared with the best (usually the climax) capable of growing on each site.

Classifying range condition provides an approximate measure of any deterioration that has taken place in the plant cover and, thereby, provides a basis for predicting the degree of improvement possible.

Although SCS does not determine stocking rates directly from range inventories, the local conservationist suggests an initial stocking rate for each range condition class on each range site based on a combination of local records and experience. These suggested rates are set forth in range technical guides of the work units.

Because of seasonal and annual variations in forage production, it

(*Continued to p. 162*)

Grass is cut at ground level within a measured plot (marked by the steel band in this case). The current year's growth is separated from older material, dried, and weighed.

The Texas Brush Problem

Resurvey of rangelands after 15 years shows woody plants continue to increase

By H. N. Smith and C. A. Rechenthin
State Conservationist and Soil Conservationist, SCS, Temple, Tex.

A "population explosion" of undesirable woody plants on the grasslands of Texas continues in spite of widespread efforts and millions of dollars spent in combating the brush.

A resurvey of the brush problem in Texas by the Soil Conservation Service in 1963, as a followup to one made in 1948, revealed that many species are still encroaching on new areas as well as increasing on land already infested.

Mesquite has increased by 1¼ million acres in the last 15 years and is now found on 56½ million acres.

Acacia, cactus, and other chaparral offer a poor diet for livestock and rob the grasses of needed moisture.

The junipers, locally called "cedars," have spread to an additional 3½ million and now cover more than 21½ million acres.

Huisache, retama, cactus, whitebrush, saltcedar, and Macartney rose also are encroaching on native grasslands at an alarming rate.

82 Percent Affected

A total of 88½ million acres, or 82 percent, of Texas grasslands were found to be infested with woody plants of some kind, either in pure stands or in mixtures. Fifty-four million, or 50 percent, are so densely infested that soil and water are being wasted in the production of nonusable vegetation, erosion is often serious, and useful forage production is so low that profitable ranching is threatened.

Less than one-fourth of Texas grasslands have 50 percent or more of the desirable forage plants remaining and can be rated in good or excellent condition. At least 30 or 35 percent are in poor condition, having little grass cover. Major and costly treatment is necessary to control the woody plants and restore the land to profitable production.

Some for Wildlife

At least 50 different kinds of woody plants have invaded or increased on Texas grasslands so that they have become serious problems.

Some of them are good browse and wildlife food plants, but they have increased to such dense stands that they drastically interfere with the production of other desirable forage plants. Preservation of wildlife habitat areas rather than complete removal of brush is a necessary part of sound planning for brush control.

Erosion cut the ground out from under a mesquite tree in poor condition range.

Only One Step

Brush control is only one step in the restoration of grasslands, which must be done in a planned, systematic program if it is to be fully effective. Other essential steps are reestablishment of good forage plants, control of brush reinfestation, and management of grazing to maintain a vigorous stand of grasses.

More than 30 million acres of brush have been treated in the past several decades, some of it two or three times, but reinfestation from root sprouts and seedlings has nul-

lified the treatment on most of it in 4 to 10 years.

The Soil Conservation Service estimates that treatment is still effective on only about 15 million acres, much of which is becoming reinfested and soon will need retreatment. Ranchers are hardly holding their own in the fight against brush.

A Costly Operation

Controlling undesirable brush is a complex and difficult operation, as well as expensive. Costs range upward from a low of about $3 an acre. Complete treatment for some thickly infested grassland, which may include treating the brush, raking and burning, seeding, fencing, and other measures, sometimes requires an outlay of $15 to $35 an acre. The cost alone prohibits many operators from carrying out a control program, even though the Federal Government makes limited cost-sharing available.

Both mechanical and chemical control methods are being used extensively in Texas. Goats as browsing animals are becoming more important in the control of sprouts and reinfestation.

Bulldozing is the most effective mechanical control method but its cost limits its use to small areas or tracts with scattered trees.

A "grandpa" mesquite lords over its progeny on an area that was open prairie 20 years ago.

Rootplowing is the most practical and effective control for thick stands of brush where there is little grass and the area needs reseeding. This method is particularly adapted to mixtures of brushy species, some of which are resistant to chemicals, or to stands too thick to be effectively treated otherwise.

A problem associated with rootplowing has been the difficulty of getting stands of grass, especially native species, in some parts of the State.

Good stands of buffelgrass and blue panicum and natural recovery of native grasses have usually been obtained in south Texas, but results have often been poor elsewhere.

A Seedbed for Grass

The rough, cloddy condition of the surface after rootplowing seems to be an unfavorable seedbed for some grasses. Firming and smoothing the surface by chopping, rolling, or dragging with a heavy chain before seeding have resulted in much better stands. Some ranchers use a front-end rake on a tractor to stack the brush, thereby smoothing and firming the seedbed. This has helped to obtain successful stands of grass.

Another problem with rootplowing in south Texas has been the subsequent spread of pricklypear cactus and whitebrush. These plants have rapidly reinfested some treated areas in a few years so that they create as big a problem as the original cover. Some ranchers have used raking to control reinfestation with good results.

Railing is another method increasingly used to control the spread of pricklypear. Ranchers use a heavy tandem drag made of railroad rails welded together in two's or three's to crush the pricklypear pads. Cattle are usually turned into the freshly railed areas

Conservative grazing after brush control allows native grasses to increase. Scattered shrubs and brush piles provide shelter for wildlife.

to eat the broken pads and prevent their taking root.

Kerosene applied to the base of mesquite and several other species is effective, but the difficulty of application and cost of labor restrict this method to small areas or scattered trees.

The hormone herbicides, 2,4-D, 2,4,5-T, and 2,4,5-TP, are widely used in brush control. Mesquite, shin oak, post oak, sand sagebrush, and other susceptible plants are hand-sprayed around the base when in small areas, or by airplane or helicopter in large areas. Although top kills generally are as high as 80 or 90 percent, root kill is often as low as 5 or 10 percent. The erratic results and the hazard of drifting spray to nearby crops have limited the use of aerial spraying.

Inverted Emulsion

One of the newest and most promising advances in the use of herbicides in aerial spraying is the development of an "inverted" emulsion which greatly reduces the drift hazard to crops. The inverted emulsion in which the herbicide is suspended has a consistency somewhat like mayonnaise. The jellylike droplets fall nearly straight down from the plane or helicopter.

The use of goats to control woody species and sprouts on treated areas is becoming more common. Goats naturally use browse as a large part of their diet and will defoliate woody plants as high as they can reach if enough animals are concentrated on an area.

Effective control of brush is obtained by concentrating goats on a pasture long enough to completely defoliate the shrubs, and then moving them to another pasture. A three- or four-pasture system is most practical for such treatment.

Three years of such treatment will generally reduce the infestation to within desired limits. Goats can also be used in lesser numbers to maintain effective control once it is established. ♦

Lana: A Vetch for the West

Versatile legume thrives on many sites in range, pasture, and cropland

By H. W. Miller
Plant Materials Specialist, SCS, Pleasanton, Calif.

FROM a few legume seeds on an overgrazed Turkish hillside to more than half a million acres of improved range, pasture, cover crop, and wildlife food—this is the story of Lana vetch.

Lana has become an important conservation plant in 7 Western States and 3 foreign countries, and promising results are reported from 10 other nations on 4 continents.

Lana, Spanish for "woolly," is the name given an improved strain of woollypod vetch developed at the Soil Conservation Service Plant Materials Center at Pleasanton, Calif. Seed originally was gathered from a plant growing on an eroded, overgrazed hillside near Adana, Turkey.

The California Department of Conservation, the California Agricultural Experiment Station, and the SCS plant materials center all had a hand in Lana's development.

Lana first began to show promise in the early 1950's and was approved for certification and released for standard use in 1957.

Reasons for Lana's popularity are many. They include the systematic plant improvement program of SCS that made rapid testing and spread of practice possible. But the biggest factor is the legume's versatility.

Range Forage

A major need in the West has been a reliable legume for improving the quantity and quality of range forage. Forage that is at least 30 percent legume will produce more meat or milk than one

Lana vetch mixed with Blando brome provides good erosion-preventing cover on the Adobe Creek watershed dam in the West Lake Soil Conservation District, Calif.

that has no legume. But keeping legumes in the stand is a problem.

Lana stays when fertilized, whether the rainfall is 8 inches or 30 inches. And it makes up to 30 to 40 percent of the forage. This has meant about $12 million additional income from livestock to California ranchers alone, says Dr. A. L. Hafenrichter, SCS plant materials specialist for the West.

Lana spreads rapidly from original seedings, both by accident and by design. As one travels north from the Mexican border through California and western Oregon during late April and May, Lana is almost continuously in view. Its bluish-purple flowers and sprawling green growth are in evidence on the roadsides, in neighboring orchards, fields, and ranges—wherever a seed has a chance to lodge. Cattle, sheep, horses, and goats all take it readily when it is green, and relish it so much that the ground often is licked bare after Lana is dry.

This unfertilized stand of Lana vetch yields twice the forage of other range; with 200 pounds an acre of 16-20-0 fertilizer, yields can be tripled.

Green Grazing

Frank Nissen, a sheep rancher in the Western Yolo Soil Conservation District, Calif., gets longer green grazing for his ewes and lambs with Lana, and it is one of the few dry feeds his sheep will graze. He has seeded Lana on his hilltops so it will creep down the slopes too steep to plant.

SCS Agronomist D. G. Craig says, "We made a start on Lana vetch in the Southwest with the few pounds of seed I scrounged on a trip to the Northwest several years ago. Starting from this with an additional small seed order later on, we have the legume growing all over east Texas and Oklahoma to the tune of several hundred thousand acres each year. It is doing a good job as a winter cover crop and also gives lots of good winter grazing."

Another area in which Lana shows real promise is in control of Medusahead, a serious pest on western ranges. Medusahead is a weedy, annual grass that invades and spreads rapidly over poor-condition rangeland, crowding out better forage species. Its feed value is very limited. When seeded and properly fertilized with phosphate, Lana overtops and suppresses the weed as well as providing nutritious range forage.

Lana also helps improve quality of grazing in aftermath stubble of grain fields. Perhaps most important is the self-seeding ability of Lana. In the Upper Salinas Soil Conservation District, Calif., Bill Gerst reports that the vetch has volunteered and provided grazing in alternate years in the same field.

Food for Wildlife

Lana vetch is a boon to the newest phase of the conservation program — income-producing recreation. Wherever Lana occurs, concentrations of doves and quail can be expected. Deer, rabbits, and other smaller game like it too; they feed on the seed as well as the foliage.

In the Northern Sacramento Valley of California, a group of 20 sportsmen paid Melvin Hans $500 to shoot doves on his Lana vetch rangeland.

In the Western Shasta Soil Conservation District, Cooperator Bill Ryne reported that his Lana vetch seeding not only attracted hundreds of doves, but also made them stay all winter instead of migrating.

Doves Like It

Food habit studies of the California Department of Fish and Game show that Lana vetch seed and new seedlings are a preferred food. Lana occurred in 10 of 19 dove crops analyzed. Volume of use ranged up to 94 percent and averaged 34.5 percent of the crops' contents.

In September 1963, 187 mourning doves were collected near a 2-acre Lana vetch seed production field. Lana had been the principal food of 169 of them.

Use of Lana for food by quail and pigeons also is authenticated. Ed Campodonico in the Arroyo Grande Soil Conservation District asked Department of Fish and Game Warden Johnson why valley quail were increasing on his ranch. Doves, too, lingered long in this area for the first time. Discussion

disclosed that Lana vetch had been planted in a badly eroded field in 1955. Although there had been no other cultivation or reseeding done, the vetch had spread a lot, and examination of doves and quail proved they were utilizing Lana seed.

More than a thousand doves were seen on a 3-acre Lana range seeding near Sunol on February 26, 1962—when most doves would have long since migrated. California quail have increased on the Pleasanton Plant Materials Center from a single pair to a flock of more than 100 birds. They feed on the harvested Lana seed fields each summer, fall, and winter.

Now, with more than 300,000 acres in California alone in Lana, its value for upland game and recreation is being realized.

Other Uses

Lana vetch mixed with Blando brome provides reliable cover in disturbed areas in small watershed projects and stabilizes banks. It also is effective as a cover and green manure crop in orchards. Bees like it, too, and Lana vetch honey is attracting considerable attention.

Lana vetch has taken its place as a versatile and reliable conservation plant. Of the 20,000 plants tested at Pleasanton, it is one of the best.

As Carlos Corvetto from Chile, who began with 1 pound of seed and 3 years later had 30 acres planted on his Chequen farm near Concepcion, put it: "She is . . . really wonderful." ♦

Christmas Trees Make Gully Plugs

BOY Scouts of Troop 24, Whitehall, Mont., use old Christmas trees to help control soil and water losses.

Several years ago George Capp, rancher and cooperator of the Jefferson Valley Soil and Water Conservation District, asked the Scouts to help him plug some gullies and stop soil from washing down into his irrigation canal.

He suggested that instead of burning old Christmas trees they put them in the gullies to check erosion.

Every year since then, the Boy Scouts have made a conservation project out of their community Christmas tree cleanup. Bob Fleege of the Soil Conservation Service, Patrol Dad of the Falcon Patrol, and Mr. Capp decide where the trees will be placed.

This community service not only helps rid the town of the trees, but it also gives the Scouts some firsthand, practical experience in the conservation of soil and water. —ROBERT L. ROSS, *Range Conservationist, SCS, Butte, Mont.* ♦

Trees Planted on Shaft Mining Land

A tree-planting program promises conservation and new productivity for mining land in the Williamson County Soil and Water Conservation District in Illinois.

The Madison Coal Company of Carterville has started the program on cropland that it purchased in 1900 for shaft-mining. The last of the mines were closed in 1931. The land had been rented to local farmers on an annual cash basis, giving little incentive for conservation.

With the aid of a soil survey made by the Soil Conservation Service and the University of Illinois, the company has made plans and decided on which trees to plant. It obtained planting stock from the Illinois Department of Conservation. The first planting was 300,000. To date more than half a million have been planted.

The first cutting will be made in 12 to 15 years and will be used for pulp. Subsequent cuttings will be made every 4 years until after 25 years, when trees are expected to be large enough to market for telephone poles.

"This is a big step forward in soil and water conservation in our district," says John M. Biehl, chairman of the district. "Mine companies own a big percentage of the land in our district."—SILAS W. BROWN, *Work Unit Conservationist, SCS, Marion, Ill.* ♦

Range Management Society Holds Rancher Key to Conservation

"The Rancher—The Key to Range Management" is the theme of the eighteenth annual meeting of the American Society of Range Management, to be held February 9 to 12 in Las Vegas, Nev.

Speakers will discuss a wide variety of subjects pertinent to the grazing industry, according to President Wayne Kessler.

Since it was organized in 1947 at Salt Lake City, the Society has grown to nearly 5,000 members. They include ranchers, farmers, teachers, researchers, commercial seedmen, and members of action agencies and the land administering bureaus who are interested in grassland science and practice.

According to its credo in the masthead of its *Journal of Range Management*, "The American Society of Range Management was created in 1947 to advance the science and art of grazing land management, to promote progress in conservation and sustained use of forage, soil and water resources, to stimulate discussion and understanding of range and pasture problems, to provide a medium for the exchange of ideas and facts among members and with allied scientists, and to encourage professional improvement of members."

A Modern Cattle Drive

South Dakota rancher takes to the trail to conserve beef, money, and grass

By Dwaine C. Smith and Herbert R. Davis
Range Conservationist and Work Unit Conservationist, SCS, Pierre and Ft. Pierre, S. Dak.

"HEAD 'em up! Move 'em out!" shouted "Trail Boss" Roy Houck and the drive was on.

It was late summer and time for Rancher Houck to move his 2,000 head of cattle to 50,000 acres of winter range at Triple U Ranch at Standing Butte in central South Dakota. The grass on the Akaska ranch operated by Houck and his son, Jerry, had been grazed to its conservation limit.

Houck learned long ago the value of good grasses to his ranching. Both he and Jerry are cooperators with the Stanley County Soil and Water Conservation District.

The Drive Begins

Houck is a firm believer in the conservation rancher's rule: "Take half and leave half." This was one of the reasons behind his cattle drive.

The sun was just sliding up above the flat rolling plains the day Houck rode out among his herd and worked the lead critter out in front, just as in the big trail drives years ago when herds had a leader to start walking so the other cattle would follow.

It would take a day or so for the herd to become trail-broken and the cattle realize they were supposed to keep moving every day behind the leader.

The half-dozen cowpokes, including Houck's two sons and young daughter, formed a circle around the herd which had spread out over miles forming a long narrow column, and they were ready to start pushing west.

Overland trail drives hadn't been done in a good many years. But such drives are not new to Houck, a former lieutenant governor of South Dakota. In 1934, to escape grasshoppers and drought, he took part in a 200-mile drive with neighbors in moving 1,000 head of cattle from South Dakota to Nebraska. Driving meant less shrinkage and less danger of disease; he'd be saving a lot of money by moving the stock overland this way.

Hard Work

It was work—grueling work—in all kinds of weather. The crew was in the saddle from sunup till sundown. The whitefaced Herefords constantly tried to stop and graze and the cowpokes had to keep swinging their ropes to get them moving again.

The job was to get the herd to Standing Butte all together and in good shape. Each man in the outfit had at least four horses, since a horse must rest once in a while to avoid lameness. A wrangler took the horses on ahead each morning. The 125-mile drive to Houck's winter range took 13 days.

While this modern drive was reminiscent and had much of the color of early-day drives, changes have taken place over the years.

Modern highways and long bridges make Roy Houck's cattle drive different from those of the Old West.

The chuckwagon, full of steaks for the cowpokes, moves on ahead of the herd.

Perhaps the biggest change is today's good grass management. Now the rancher's primary concern is keeping an excellent cover of grass on the range for both livestock use and erosion control. Another big change is in the accompanying chuckwagon.

Drovers no longer are victims of a steady menu of salt pork and beans and sourdough biscuits, flavored heavily with trail dust.

Houck hired two of the best chefs in the area and purchased more than a ton of food so that when the dozen hungry punchers rode in after a day's drive, there was a huge pot of coffee and a platterful of steak on the tailgate of the chuckwagon.

Houck got requests from people all across the Nation wanting to participate in the drive. Only a dozen local cowpokes were actually used, but dozens more newsmen and

Drive pauses while drovers change horses (Houck's son Jerry is at right).

aspiring waddies from the East, South, and West joined for part or all of the drive just to participate in an "old west cattle drive."

New Difficulties

Although the modern drive is easier in some respects, there still are plenty of difficulties, many not encountered in the early-day drives.

For example, the early drives usually traveled across open country, unhampered by fences, modern roads and traffic, and other encumbrances of modern life.

Planning, in fact, was a major item in the Houck drive. Charting the best course was a difficult problem. Making certain that forage and water were available for a couple thousand head of hungry animals was not easy. Obtaining permission to drive the herd across another man's rangeland, graze his grasses, and drink his water was necessary.

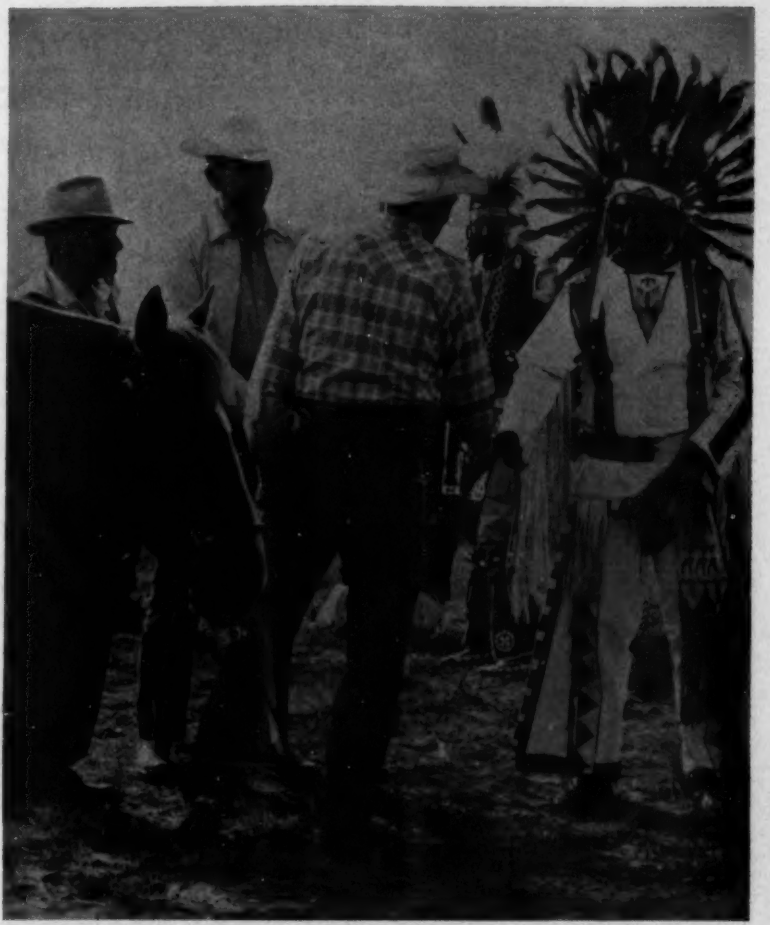
Streams and stock ponds along the way provided the cattle with water. Recent rains made the trail green with grass.

Supplying the cattle with food and water wasn't as much a problem as figuring out how much another man's forage was worth and how wide the drive would be across his land.

Houck figured that his 2,000-head herd would eat approximately 50 animal-unit-months of grass each day, enough to feed 1 mature cow for 4 years and 2 months.

The Cheyenne River was forded in the extreme northwest corner of Stanley County, as close as the cattle caravan could cross behind the backwater of the world's largest earth dam, the Oahe Dam some 60 miles downstream. The current in the river meant some of the prized stock could be pulled downstream. To counter this, some of the cowpokes were posted down river to pick up the Herefords when they came out of the water on the opposite bank.

The mighty Ole Missouri was crossed at the U.S. Highway bridge



Houck and Chief "Olney Runs After" relive custom of trading cattle for right to cross land.

Houck's family and the 12 drivers take a breather in the shade near the chuckwagon.

Rancher Roy Houck, leader of the cattle drive, rounds up some strays.

which spans more than 4,500 feet. This crossing was probably the most unusual spectacle on the drive. The herd, used to prairie sod, was skittish of the bridge and had to be kept moving to prevent bunching or stampeding.

End of the Trail

It was here that the drive took on much of the color of the early-day drives. A band of Cheyenne Indians in tribal dress staged a dance as part of a traditional ceremony. "Paleface" Houck traded some beef animals to Chief "Olney Runs After" in exchange for permission to cross through the belly-high prairie grass on the reservation.

After crossing the reservation, the drive came to the end of the trail — Houck's Triple U Ranch, with its 50,000 acres of winter range, managed under a conservation plan with the Stanley County District.

The Houcks worked closely with the Soil Conservation Service in drawing up the conservation plan for the ranch and have spent about $15,000 a year in applying the practices called for in the plan.

A major part of the plan involves cross fencing and stock-water development, all to insure even grazing of all pastures. Land having inadequate cover has been seeded to adapted range grasses. Deferred grazing and proper range use are practiced to manage these grasses. Some tree shelterbelts have been planted. Houck hopes to complete all the measures in 4 or 5 years.

Other interesting enterprises are being carried out on the ranch. The Houcks are experimenting in cross breeding of Hereford cows with Charolais bulls. They also are keeping a herd of 40 buffalo, which Houck says is not easy. The Houcks also maintain a high-quality quarterhorse herd, in addition to their annual cow-calf operation of 700 head of breeding cattle and 1,500 to 3,000 head of steers.

Steer Enterprise

The steer enterprise gives the Houck operation flexibility for good and bad years and helps get proper range use each year. Houck says he may switch exclusively to steers some day since they are easier to handle than a cow-calf operation and are easier on the range.

The Houcks' two-way radio system between the ranch headquarters and every ranch vehicle is in constant use. In addition, both Houcks are pilots. Roy flies mostly on business trips, while Jerry is in his plane almost daily to keep an eye on all the far-flung phases of the Houck operation.

The "cattle drive" is about the only throwback to the early days — and, Houck admits, it has seen some changes over the years. ♦

Outdoor Recreation Opportunities

Recreation opportunities on the Nation's privately owned farm, ranch, and woodland are virtually unlimited. The simple recreation activities are the most in demand. Some people want to swim, hike, picnic, or fish. Others want to golf, hunt, camp, boat, or just relax. Farmers and ranchers can develop facilities for these activities by proper soil and water management. They can switch over-abundant cropland into profitable recreation facilities, develop these facilities on formerly idle areas on their land, or combine recreation and farming on the same land. "Rural Recreation" (USDA Misc. Pub. 930) reports on new opportunities for private land. ♦

Rancher Makes Showplace On Private, Public Land

By Edwin P. Engle and John O'Hayre
Work Unit Conservationist, SCS, Gunnison, and Conservation Educationist, Bureau of Land Management, Denver, Colo.

THE Tomichi Ranch operated by James P. Sloss near Gunnison is rapidly becoming a showplace in Colorado and demonstrates what can be done toward range rehabilitation on an operating unit that includes both private and public land.

In 1959-60, after Sloss acquired the ranch in 1958, the Soil Conservation Service and the Bureau of Land Management technicians, through the Gunnison Soil Conservation District, assisted the new landowner make an inventory of his range resources.

The range was in a low productive state, and some areas were heavily overused from cattle concentrated around available water.

Rancher Sloss decided that a number of range improvement practices should be put into effect as rapidly as possible to get maximum production.

The first step was to enter into a range division agreement with other users and the BLM to establish an individual allotment of 5,460 acres of Federal and 2,660 acres of private land. Heretofore, the Federal range was used in common with five other permittees.

In addition to a soil and water conservation plan, the long range improvement program called for constructing about 13 miles of boundary fence to enclose the allotment, controlling sagebrush, building additional stock-water facilities, and cross-fencing.

During 1961, in cooperation with the BLM and the Gunnison District, 1,360 acres of sagebrush land, of which 736 acres was privately owned and the balance of 624 acres in Federal ownership, was aerial-sprayed. Thirty-two stock-water springs were developed to provide adequate water and better distribution of grazing.

Proper grazing management was recognized from the start as an essential part of the range rehabilitation program. A 10-year permit issued by BLM in 1959 provided for an annual use of 528 animal-unit months by 176 cattle. In order to accelerate range rehabilitation, only 263 animal-unit months of grazing was utilized in 1960, and the permittee took the option of nonuse in the 1961 grazing season.

By 1962 the range had improved enough to allow 550 animal-unit months of grazing. For the 1963 grazing season, Sloss was licensed to graze 300 cattle for a total of 864 animal-unit months.

The water developments have proved invaluable in achieving good grazing. The sagebrush kill was estimated to be 95 percent effective, thus providing more favorable growing conditions for grass. Grass production has increased from 200 pounds air-dried forage an acre to about 1,100 pounds an acre on the sprayed area. ♦

Rancher James Sloss is pleased with grass in sprayed area as he makes utilization check at end of grazing season.

Grass recovery is evident in Stubb Gulch area of Tomichi Ranch after spraying and conservation grazing.

Narrow Strips, Grass Cover Win Favor With Farmers

By Walter J. Guernsey
Conservation Agronomist, SCS, Lexington, Ky.

NARROW stripcropping patterns and grass cover crops are gaining favor with Kentucky tobacco farmers as refined conservation practices that do more than control erosion.

These modern practices, developed by Soil Conservation Service conservationists working with soil conservation district cooperators, increase profits and produce many side benefits as well.

Experience has shown farmers that by drastically narrowing tobacco strips in stripcropped fields they can improve the quality of the crop and gain other advantages over earlier methods.

The first year the narrow strips were tried most cultivated strips had 12 to 16 rows of tobacco. Since then the number of rows has been gradually reduced until now many farmers plant only 4 or 6 rows in a strip. Sod strips equal or exceed the cultivated strips, with a minimum width of 15 feet.

Morris Edmonds, of Russell County, said "I have made from $100 to $300 more an acre a year since starting the practice 4 years ago."

One of the benefits farmers note is that crops in outside rows improve in quality and in amount when the sod strips are kept mowed for hay and the natural shelter for grasshoppers and other insects found in fence rows and along field borders is eliminated.

Insect control is reported easier because tractor-mounted spray rigs operate on the sod strips and the spray boom extends out over the tobacco rows. One-half of the rows

O. G. Stephens of the Russell County SCD shows how easy it is to spray his 8-row contour strip of tobacco from the sod strips.

can be sprayed from either side.

Better air circulation between rows and under the tobacco leaves reduces the number of leaves lost from scalding or rotting during hot humid weather. The sod or meadow strips can be used as roadways for moving farm machinery when spraying and harvesting tobacco, thus greatly reducing soil compaction on the cultivated strips.

The other new conservation practice, the use of grasses for winter cover crops, is gradually being adopted by the tobacco farmers of Kentucky. Until recently the use of small grain and vetch as a cover crop on tobacco land was traditional.

Today field bromegrass, an annual, and Kentucky 31 tall fescue, a perennial, are being widely used. Field bromegrass was introduced into Kentucky by the SCS.

Both grasses produce from five to eight times as many roots in the 8-inch plow layer as wheat. They do not produce seed stems or head out as early as wheat. Plowing can be delayed 2 to 3 weeks without worry to the farmer or danger of the grasses getting woody or otherwise out of hand.

One farmer has been using fescue as a cover crop for several years with excellent success. He sows fescue at the last cultivation, a practice that was common with corn.

These discoveries have been dramatic lessons to Kentucky farmers that conservation practices diligently applied mean the difference between mediocre or poor farms and thriving, prosperous ones, whatever the crop. ♦

Tall Stubble and Standing Strips

Think now of where the snow was blowing off the land last winter, and plan to leave tall stubble, standing strips of cornstalks, or unmowed sweetclover this crop season to help hold that moisture. ♦

Land and Water Conservation Fund Can Aid Local Recreation Plans

By Henry F. Nichol
USDA Representative on the Recreation Advisory Council Staff

THE Land and Water Conservation Fund Act, passed at the last session of Congress to provide more recreation opportunities on public land, will also have a significant effect on the private sector of American life. It is likely to be one of the most important conservation and recreation measures of our generation.

The act sets up a Land and Water Conservation Fund which will be used by States and Federal agencies to develop more outdoor recreation resources.

When President Johnson signed the act on September 3 he said that this bill "assures our growing population that we will begin to acquire on a pay-as-you-go basis the outdoor recreation lands that tomorrow's Americans will require."

Three Sources of Revenue

The fund will obtain revenue from three sources: (1) Admission and user fees at Federal recreation areas; (2) revenues from Federal taxes on motorboat fuels; and (3) net proceeds from the sale of Federal surplus real property. In addition, the fund will include advance repayable appropriations by Congress which may average $60 million annually for an 8-year period beginning in 1967.

Sixty percent of the fund will be made available as grants-in-aid to the States on a matching basis. Money to the States may be used for planning, acquisition, and development of recreation projects. Of the amount available to the States, two-fifths will be divided equally and three-fifths will be distributed according to need.

Although Congress has not prescribed a formula for determining need, it has indicated that three factors should be taken into consideration: (1) Population, (2) out-of-State visitor use, and (3) Federal resources and programs.

Districts Can Share

Soil conservation districts, counties, and other political subdivisions of the State government may qualify for grants-in-aid under this program. Local requests for projects are submitted through the State government.

The other 40 percent of the fund will go to Federal agencies for the acquisition of certain types of land, including land needed for National parks and forests, and for the preservation of species of fish or wildlife that are threatened with extinction. Not more than 15 percent of the land acquired for National forests may be in the western half of the United States.

The act does not automatically provide financing for outdoor recreation. All money must be allocated through the regular budgetary process and must be appropriated by Congress.

Also the act does not provide any Federal acquisition authority. Areas may be acquired by Federal agencies only if authorized by Congress.

The act became effective January 1, 1965. The Bureau of Outdoor Recreation, which is responsible for its administration, estimates that $45 million will accrue to the fund in the current fiscal year and $125 million in fiscal 1966.

When in full operation, the fund is expected to reach $180 million to $200 million.

As already indicated, the act applies only to public land and land to be acquired for public ownership and use. It does not provide any direct assistance to private landowners.

The Land and Water Conservation Fund Act, however, will have important effects on Department of Agriculture programs and Rural Areas Development. One of the most important effects will be its impact on private recreation enterprises.

It is difficult to predict just what this impact will be. With more than $100 million a year going into the States on a matching basis, there is some feeling that the recreation areas and facilities developed through this fund may reduce the opportunities for the private operator. Surely, it is important that fees for use of Federal recreation areas be set at rates that will enable private enterprises to compete on an equitable basis.

Estimates indicate that the fund will not begin to take care of the expected future demand for recreation facilities. If the fund is used in the right way, there would seem to be little doubt that the opportunities for the private sector will be increased rather than diminished.

Comprehensive Plans

In order to qualify for funds, a State must submit a comprehensive statewide outdoor recreation plan. This plan will include all outdoor recreation resources and programs — Federal, State, local, and private—in the State. It will cover an action program extending over 5 years.

Money is available from the fund to assist States in making their comprehensive plans. Funds may also be made available for planning by the Housing and Home Finance Agency under Section 701 of the Housing Act of 1954.

The great potential of private land for recreation should be stressed throughout the preparation of State plans. All of the Department's programs on outdoor recreation should be considered in the State planning process. Each plan should be as complete as possible and should contain a proper balance between public and private recreation.

It is important that preparation of a State plan include consultation with all Federal and State USDA officials concerned, with RAD Committees and Technical Action Panels, soil conservation district officials, and other agricultural committees.

Secretary Freeman has recently focused attention on the need for developing the "nonfarm rural economy." He has pointed out that the traditional farming operations can provide a decent income for only 1 out of 8 or 10 of the families now living in rural America, and that nonfarm opportunities must be developed for the other 7 to 9 families.

Outdoor recreation on private rural lands may be one of the most important of these opportunities. The successful combination of private enterprise and the public effort to meet the increasing demands for outdoor recreation offers a challenge of the first magnitude. ♦

Range Surveys

(*Continued from p. 149*)

is necessary to make periodic adjustments in stocking rates to insure proper range use.

The table on page 149 shows the kind of information obtained from an analysis of the vegetation on a sandy range site in the Rolling Red Plains in Oklahoma.

Conservationist's Conclusions

With the foregoing information at hand, the range conservationist can draw the following conclusions and interpretations for the guidance of the ranch operator:

(1) The range is in good condition. While 70 percent of the present vegetation is the kind that is best for the site it is obvious that sand sagebrush and Havard's oak have increased and that brush control should be practiced.

(2) The 4,000 pounds of vegetation provides more than ample soil protection, but the oak and sagebrush have replaced part of the climax decreasers, reducing livestock forage and using part of the moisture supply to produce lower quality plants.

(3) The type of forage is suitable for cattle, sheep, goats, deer, buffalo, and antelope. However, the sandy site is too subject to erosion to be used safely by sheep and goats. Fair and poor condition ranges on this site are not satisfactory grazing areas for cattle or big game. The young oak leaves often are poisonous to cattle.

(4) Ranges on this site in good and excellent condition provide favorable amounts of food and cover for quail and prairie chicken. Kangaroo rats and pocket gophers increase as range condition declines.

(5) When this range site adjoins bodies of water with recreation facilities, it is suitable for riding trails. It can also provide good hunting.

This modern, scientific survey gives the district cooperator sound information that he can use in developing a basic conservation plan, Mr. Allred concludes. The identification of the different range sites on the land and the classification of the vegetation on each site furnish a basis for making decisions on grazing management for livestock and game, the season of use, the wildlife and recreation opportunities, the kind and amount of conservation cover present, and the kind of treatment and management needed to improve the soil, water, plant, and animal resources for sustained production and income. ♦

A Conservation Plan for County Roadsides

A CONSERVATION plan for the entire network of roads in Fulton County, Ga., is the goal of the county officials and supervisors of the Atlanta Soil and Water Conservation District.

The county commissioners are stabilizing backslopes on roadbanks as soon as possible after construction. When not busy on new roads, they are working to get vegetation on older roadbanks.

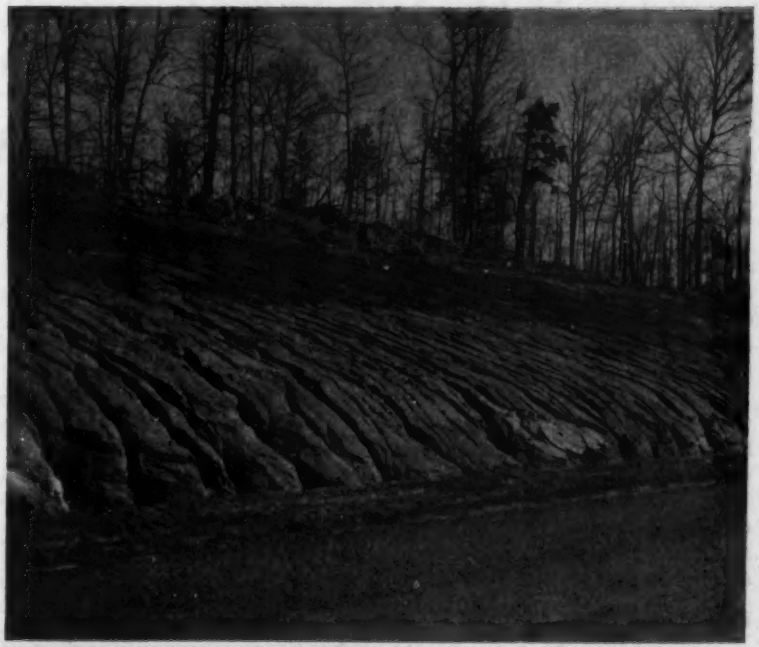
The work is being done under cooperative agreement with the conservation district and with the assistance of the Soil Conservation Service.

The commissioners became interested in vegetating backslopes when work started in Little River subwatershed of the Coosa River in the northern part of the county. They entered into an agreement with SCS under which the county furnishes labor and SCS furnishes materials (lime, seed, and fertilizer) for establishing vegetation on the roadbanks. To date, roadbanks of all paved roads inside the watershed, a total of about 73 miles, have been vegetated.

The commissioners were so impressed with this work that they agreed to furnish all materials and labor and reimburse the Service up to $3,000 a year for a conservation technician to supervise the same kind of work outside the watershed project. To date, about 24 miles of roadbanks have been vegetated outside the watershed.

A mixture of sericea lespedeza and weeping lovegrass or common bermudagrass is being used on the banks. Seed-bearing sericea hay is used for mulch and seed. Cooperators of the conservation district donate the sericea hay. The county cuts, bales, and stockpiles the seed-bearing mulch to be used during the winter and spring.

Five cooperators received permission from the Agricultural Stabilization and Conservation Service to donate mulch from land that is in the Conservation Reserve —



A protective covering of weeping lovegrass hides the scars of erosion on a roadbank 3 months after planting.

GEORGE R. PEEPLES, *Area Conservationist, SCS, Decatur, Ga.* ♦

Nolen J. Fuqua

Oklahoma

Life of Public Service

NOLEN Jones Fuqua of Duncan, Okla., for 4 years president of the National Association of Soil and Water Conservation Districts and 1964 Watershed Man of the Year, came by his life of public service naturally.

His father, Frank Fuqua, built the first cotton gin and a hotel that helped get Duncan started and was elected the town's first mayor from 1900 to 1904. As one of the town's leading citizens, he was instrumental in putting in the first reservoir, an electric system, and good roads.

Father and Son

One might say the father got the town started and his son helped to keep it going.

It was 10 years ago when floods and water shortages threatened the town with extinction that Nolen Fuqua led the campaign that assured the watershed protection and flood prevention project that brought prosperity back to Duncan.

Mr. Fuqua's influence reaches far beyond the limits of Duncan. He has traveled far and wide preaching the gospel of conservation and flood prevention.

But he still considers himself a Duncan "home town boy." He has lived most of his 70 years there. He was raised in a house just four blocks from the location of his office in downtown Duncan.

After graduating from the University of Oklahoma in 1919, he returned to Duncan where he went into the wholesale and retail gasoline business and into transportation. About this time he began farming around Duncan.

He first became interested in conservation during the early 1930's when the Nation was experiencing its worst depression and western Oklahoma farmers were facing the blight of the "Dust Bowl."

Then, about the only group combating wind and water erosion was the Civilian Conservation Corps. The CCC worked on the Fuqua farm, putting in a windbreak, some stock-water ponds, and terraces, among other things.

According to Fuqua, the work did wonders for his land, and from that day forward, he became a salesman for conservation.

So, in 1938, when Allen Kellogh, a former county agent and head of the local CCC, set out to organize a soil conservation district, the first man he approached was Fuqua. Their district was one of the first in the Nation.

That same year, Fuqua was among a group of early district supervisors who organized the Oklahoma Association of Soil Conservation Districts. He was elected its first president and served for 9 years.

National Organization

A year or so later, he was among another group from Texas, Oklahoma, Arkansas, and Louisiana that formed the National Affiliate of Soil Conservation Districts. Fuqua was elected vice president.

This was just before World War II. The organization was forgotten during the war as the Nation turned its attention to other things.

In 1947, district supervisors from throughout the country met in Chicago and formed the National Association of Soil Conservation Districts. Mr. Fuqua became a regional director in the national organization in 1950. He was named area vice president in 1951, national vice president in 1953, and was elected president in 1955. He served on many committees of the national organization.

Nolen J. Fuqua

In early 1962, he became executive director of the Soil and Water Conservation Districts Foundation, an organization created to sponsor libraries, bulletins, publications, and other things promoting conservation.

Full-Time Public Service

Mr. Fuqua retired from his business in 1945 to devote full time to public affairs. He was elected mayor of Duncan in 1964. He is currently on the regional executive committee of the Boy Scouts of

America and serves on three national committees: Soil and Water Conservation, Rural Scouts, and Relations.

He is also on the Department of Agriculture's Rural Areas Development Committee. He is on the Board of Governors of the Agriculture Hall of Fame; a director of the Oklahoma Medical Research Foundation; regional director of the Kiwanas Farm-City Week, and has many other "dollar a year" positions.

He has received the Silver Antelope and Silver Beaver Awards for his work with Boy Scouts. He was elected to the Oklahoma Medical Sciences Hall of Fame.

One of his biggest honors came recently when the largest lake in the Upper Wildhorse watershed was named Lake Fuqua. The lake is being developed for extensive recreational uses, including a multimillion dollar Girl Scout camping area.

Mr. Fuqua, however, is more pleased with what the lake represents—the successful completion of the watershed project.

He claims his greatest reward for a life of public service is in seeing Duncan prosperous and growing, with plenty of water.

In 1959, as retiring president of the National Association of Soil Conservation Districts, Mr. Fuqua was presented a scrapbook in tribute to his many years of service to conservation. The first paragraph of the letter of dedication read:

"The National Association of Soil Conservation Districts can count itself lucky that you have a pioneer heritage, a love for the land, and an all-too-painful personal memory of the Dust Bowl days. Otherwise, your energy and ability might have been channeled in different directions. As things have turned out, you have devoted years of missionary zeal to halt the senseless misuse of soil and water resources." ♦

Preservation of Natural Beauty

By Gladwin E. Young
Associate Administrator

THE beauty of America and the bounty of America go hand in hand. We need not lose one to gain the other.

A countryside of neat farm homes, red barns, rolling fields of grass, a quiltwork of cropland, tree covered hills and streambanks—all this we have come to know as "America the Beautiful." This is indeed the natural splendor of America.

This is the landscape that produces our clear streams and steady water supply. This is the land that produces so abundantly our food, our clothing, and our shelter that make beauty a meaningful human experience.

But just as beauty and bounty go hand in hand, so do ugliness and poverty.

Duststorms arise from land made barren of its vegetation. Floods begin with water racing down the slopes of tired and wornout fields to join the torrents from denuded forests and to spread ruin over the fertile valleys.

Poverty begets ugliness and ugliness begets poverty.

The Nation's efforts to assure successful family farms and healthy rural communities are integral parts of the war on poverty and a crusade for a beautiful America.

For those who can make longer journeys across the country, there are opportunities to enjoy the diversity of scenery of the great desert areas, the National Forests and Parks. And for a relatively few people the wilderness areas offer a peculiar kind of beauty. These also are a part of the beauty of America that must be preserved.

But America is beautiful because of what man has done. It could not be beautiful to 190 million people if it were still an "untouched and unspoiled wilderness." It can be made more beautiful by removing the ugly spots caused by man's careless and thoughtless actions.

Most of the land in the United States—three-fourths of it—is privately owned or operated. Most of these people have pride in the appearance of their properties. But a job still remains to bring about needed erosion control, fire control on forests and woodlands, flood control, reforestation, adequate rural housing, planned urban development, road and highway beautification, elimination of automobile graveyards, and correction of other blemishes on the landscape.

Decisions about the use and management of most of the Nation's landscape are made by millions of land owners and operators—not by public agencies. This means that the public can express its interest in how the landscape is used only as it finds ways to cooperate with these millions of owners. Fortunately, much experience has already been gained about ways to do this.

A nationwide crusade for developing a deeper appreciation of America's natural beauty would be relatively meaningless if it did not place first and foremost emphasis on the splendor and beauty that already exist, and that can be further enhanced, on the productive farmlands, woodlands, and grazing lands across the Nation. The beauty of the deserts, the mountains, the wilderness, and the swamps and marshes are a part of the total beauty of the country because they stand in contrast to the bountiful lands on which life itself depends.

We need not give up one for the other. We have both. We need to keep them in proper perspective as we seek to find ways to enhance these great values. ♦

Man and Land in the United States. By Marion Clawson. *1964. University of Nebraska Press, Lincoln. 178 pp., maps and charts. $4.50.*

This might be called the little book that goes a long way. It begins far back in English history to explain why land ownership has been and still is a powerful force in forming our "American way."

Along the way it tells, in summary but interestingly, as complete a story of our forefathers' and our own generation's land tenure and use as could possibly be included in so small a book.

An interesting feature of the book, showing the author's interests in the land of our hemisphere as a whole, is a chapter on development of land tenures and uses in Latin America and the resulting situation today in contrast to that of the United States.

The latter half deals brilliantly although summarily with our land management and tenure problems today and in the foreseeable future. Agricultural land, and the demands of the public upon it, are shown to be our greatest problem, and crucial in decades just around the corner.

It takes only a short time to read this book, but one does a considerable amount of cogitating once it is finished. It should find a permanent spot in both junior and senior high schools. And, it has real readibility for any one.—Phoebe Harrison.

North Carolina Lands. By Kenneth B. Pomeroy and James G. Yoho. *1964. American Forestry Association, Washington, D. C. 372 pp., illus. $6.00.*

In 1956, the American Forestry Association initiated studies of ownership, use, and management of forest and related lands in three distinctly different regions.

"North Carolina Lands" is the report of the third and last study. By making it in a State where small, private, nonindustrial properties predominate, the full range of Federal, State, and private ownership of the Nation's woodlands was sampled.

These studies were designed to point the way to similar studies that should be made in each of the other States as an aid to programing developments for future economic welfare.

They were also designed to create an appreciation of the role of trees, water, soil, recreation, and wildlife in the total life of the Nation.

The chapter headings indicate the exhaustive nature of this study: Resources and Industries; Evolution of Ownership; State, County, and Municipal Agencies; Federal Departments and Agencies; Private Lands and Recommendations.

Each topic appears to have been most thoroughly studied—with one exception. Soil conservation districts are not listed as a local agency nor is their potential for the development of resource conservation programs appraised. Such an omission by those who are considering current land use programs in North Carolina would be tragic.

This omission in the present report, however, does not keep it from being on the "must read" list for all people who have an interest in resource conservation in North Carolina.—T. B. Plair, *Woodland Conservationist, SCS.*

Wildlife on the Public Lands. By the Bureau of Land Management. *1964. U. S. Dept. of Interior. Unnumbered, unpaged, illus.*

Profusely illustrated and printed in full color throughout, this attractive brochure tells the story of wildlife against the background of its environment on the land administered by the Bureau of Land Management

The booklet describes the major ecological formations represented on the public land: Desert, Grassland, Coniferous Forest, and Tundra. There is an introductory explanation of some of the principal concepts of ecology and a concluding statement of principles of wildlife conservation.

The result is an effective introduction to ecology that should appeal to the general reader and lead to a better understanding of conservation problems on all land, not just that administered by BLM. ♦

New Publications

Developing the Self-Guiding Trail in the National Forests. *1964 U. S. Dept. Agr. Misc. Pub. 968. 18 pp., illus.* Instructions applicable also to hiking trails on private recreation developments.

Evaluation of Bermudagrass Varieties for General-Purpose Turf. By F. V. Juska and A. A. Hanson. *1964. U. S. Dept. Agr. Agr. Hdbk, #270. 54 pp., illus.*

Defense Against Radioactive Fallout on the Farm. *1964. U. S. Dept. Agr. Farmers Bul. #2107. 24 pp., illus.* Protecting people, livestock, land, and crops; emergency defense services.

Accelerating Rural Outdoor Recreation on Public and Private Lands. *1964. U. S. Dept. of Agr. Unnumbered, unpaged.* An illustrated brochure with maps showing where USDA aid has helped increase recreation facilities.

Replenishing Underground Water Supplies on the Farm. By Dean Muckel. *1964. U. S. Dept. Agr. Leaflet 452.* Do's and don'ts on selecting the recharge site and methods to use.

Common Trees of Puerto Rico and the Virgin Islands. By Elbert L. Little, Jr., and Frank H. Wadsworth. *1964. U. S. Dept. Agr. Hdbk. 249. 548 pp., illus. $4.25 (cloth).* Every species illustrated by a full-page drawing. ♦

The Record Shows

The record through 7,000 years shows that great empires, such as Mesopotamia, Babylonia, Syria, Phoenicia, and other great Nations in the past and present, can trace their downfall or decline to improper use of the land. Some of this information is summarized in "Conquest of the Land Through 7,000 Years" (USDA Agr. Inf. Bul. 99). ♦

From the Administrator:

Range Conservation • New Zealand Lessons

RANGE CONSERVATION has much to offer in the general adjustment of agricultural production to meet the needs of modern America.

The widespread practice of conservative grazing on native rangelands provides greater stability to ranch operation while it strengthens soil and grass resources for future needs.

Proper use is the basic practice of range conservation. Reseeding, brush control, and other range-improvement measures are insufficient unless accompanied by proper grazing; in many situations, proper grazing alone will get the desired results.

Our growing fund of cost-return information shows that proper use is also the basic requirement of profitable ranch operation. At the same time, it usually results in no more, and often smaller, per-acre yields of animal products than does heavy grazing. And quality of meat, hides, and wool are improved when the animals have an ample supply of forage on moderately or lightly grazed range.

In other words, proper grazing often produces less, but higher quality, animal gain, and puts more net profit in the producer's pocket.

The shift from cropland to grass as a land use is recognized as a basic strategy in reducing crop surpluses and conserving soil. The potential for profitable grazing of native grasses needs to be better recognized in many sections of the country.

Outside the southeastern pine areas, there has been little attention to range (native grass) management east of the Mississippi. But recent observations by SCS conservationists indicate that profitable enterprises can be based on native grazing land in every State.

The Soil Conservation Service intends to push hard to develop the art of native grass management for all sections of the country.

NEW ZEALAND provides some important lessons for people throughout the world who are interested in resource conservation and long-term economic growth.

I had the unique privilege last fall of seeing firsthand the soil and water conservation problems, programs, and organizations of that country as a consultant to its government. I was there by invitation to make suggestions on how the administration of its expanding conservation program could be improved.

I made my recommendations in an atmosphere of cordial frankness that characterizes any meeting of sincere professionals concerned with the long-term welfare of people and resources. I hope my suggestions will prove helpful to the authorities of New Zealand. I know that I profited from the experience.

I found New Zealand faced by many of the same conservation problems that are familiar in this country. Its successes and failures further confirm many of the principles we have learned in our own experience.

For one thing, I learned anew the lesson of the unity of watersheds and the need for coordinated action on upstream and downstream problems.

One of the major difficulties in New Zealand arises from the fact that most of the really good land is in the valleys, where it is subject to damage from floods and detritus from the hills; and that responsibility for the downstream "river works" is lodged in one agency that frequently shows little concern for soil erosion control, while another authority works in the hill lands with no direct concern for the valleys.

Obviously, a primary need is for consolidation or coordination of efforts to produce comprehensive coordinated plans of action for entire watersheds. Conservative use and management of the high grazing lands and forests are essential to the continued productivity of valley farms, so essential to the nation's economy, just as in our own mountain West.

In a similar way, New Zealand's experience, like ours, proves again the need for (1) developing a conservation consciousness among both citizens and government officials, (2) having the responsibility for soil and water conservation focused in a national agency that devotes its major effort to this program, and (3) lodging responsibility for doing work on the land in a local agency with maximum autonomy consistent with general public interest.

As a guiding principle I suggested that: "the concept of 'use without abuse' be a cornerstone of conservation policy and that public support be not considered as a 'subsidy' but as sharing of responsibility."

—D. A. WILLIAMS.

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More and Better Grass Pays in Great Plains

DOES it pay to reseed submarginal cropland to grass?

George W. Wingfield of Idalia, Colo., thinks so. He has 588 acres of proof.

Mr. Wingfield is a Hale Soil Conservation District cooperator and a member of the district's board of supervisors.

When he bought the 3,360-acre sandhill ranch, the cropland was subject to wind erosion, some of it severe. Blown-out areas were as deep as 15 feet, some of them down to the shale.

Under his conservation plan in the Great Plains Conservation Program, Mr. Wingfield planted sorghum on the areas most subject to erosion and left the stubble to give protection to grass seedlings. He planted a mixture of native species: Switchgrass, sideoats grama, blue grama, sand lovegrass, and big and little bluestem.

He also provided for stock water and cross-fencing to make possible better management of his grass resources. The sand sagebrush was controlled by spraying. Pastures have since made rapid recovery.

In spite of last year's drought, the fields seeded to grass provided dependable grazing, bringing new stability to the Wingfield enterprise. The returns from grass have been better and more reliable than the year-by-year yields from the land through cropping. And grassland is valued for tax purposes at about a third of the rate for cropland, he points out—GEORGE E. BAILEY AND CARL S. FONTE, *Work Unit Conservationist, and Range Conservationist, SCS, Wray and Sterling, Colo.* ♦

Native grasses made rapid recovery after the sand sagebrush was killed by spraying to the right of the fence on the George W. Wingfield ranch. The pasture to the left has not been treated.